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K&I. GATES LLP 535 SMITHFIELD STREET PITTSBURGH, PA 15222				
EXAMINER				
CONLEY, SEAN EVERETT				
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* HENRY K. HUI,  
KEITH ENGSTROM,  
BEN FRYER, DEBRA TIMM,  
SZU-MIN LIN,  
and  
ANTHONY LEMUS

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Appeal 2008-006333  
Application 10/016,057  
Technology Center 1700

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Decided: September 23, 2009

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Before BEVERLY A. FRANKLIN, LINDA M. GAUDETTE, and  
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1 through 7, 9 through 23 and 25 through 29. Claims 8

and 24, the other claims pending in this application, are not currently under rejection. We have jurisdiction pursuant to 35 U.S.C. § 6.

We REVERSE.

#### STATEMENT OF THE CASE

The subject matter on appeal is directed to, *inter alia*, an apparatus for monitoring the concentration of an oxidative gas or vapor. Claim 1 is illustrative:

1. An apparatus for monitoring the concentration of an oxidative gas or vapor, the apparatus comprising:

a first thermocouple junction;

a chemical substance coupled to the first thermocouple junction, the chemical substance reactive with the oxidative gas or vapor to produce heat; and

a second thermocouple junction coupled in series to the first thermocouple junction, whereby a net voltage is generated across the first and second thermocouple junctions upon exposure of the chemical substance to the oxidative gas or vapor, the net voltage corresponding to the concentration of the oxidative gas or vapor.

As evidence of unpatentability of the claimed subject matter, the Examiner relies upon the following references:

Pai	US 6,156,267	Dec. 5, 2000
Krahe	GB 2 191 585A	Dec. 16, 1987
Foller	WO 91/05998	May 2, 1991

The Examiner maintains the following rejections:

1) Claims 1-7, 9, 10, 18-23, and 25 under 35 U.S.C. § 102(b) as anticipated by Krahe;

2) Claims 1-3, 9, 10, 18, 19, and 25 under 35 U.S.C. § 102(b) as anticipated by Foller; and

3) Claims 11-17 and 26-29 under 35 U.S.C. § 103(a) over either Foller or Krahe, in view of Pai.

### ISSUE

Have Appellants shown reversible error in the Examiner's finding that both Krahe and Foller anticipate the subject matter of claims 1 and 18 that requires first and second thermocouple junctions coupled in series? We decide this issue in the affirmative.

### FINDINGS OF FACT (FF)

1. All of the claims on appeal require that first and second thermocouple junctions are coupled in series.
2. The Specification states that

using two thermocouple junctions 110, 120 in *series requires only one sensing circuit or one data acquisition channel* to monitor the concentration of the oxidative gas or vapor, as opposed to two data acquisition channels as in Figure 3A. Besides providing a potential cost savings, using only one data acquisition channel or sensing circuit eliminates the potential effects of variations between the multiple channels or sensing circuits. Second, since the net voltage across the two thermocouple junctions 110, 120 represents a temperature difference rather than an absolute temperature, the dynamic range of values is smaller, so the an [sic] analog-to-digital converter with a given number of bits can thereby provide greater precision when used in the chemical concentration measuring system. Third, because only one pair of conductors is needed to detect the net voltage across the two thermocouple junctions 110, 120, the size of the concentration monitor 10 can be made smaller to fit into various diffusion-restricted environments, such as narrow lumens.

(Spec. 20-21) (emphasis added).

### PRINCIPLE OF LAW

Under 35 U.S.C. § 102, anticipation is established only when a single prior art reference describes each and every element of a claimed invention. *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990).

### ANALYSES AND CONCLUSIONS

With respect to rejections (1) and (2), Appellants argue that Krahe's Figure 2 and Foller's Figure 1 individually show that "each temperature sensor is independently tied back to the controller," which forms at least two sensing circuits or two data acquisition channels. (Br. 4). In other words, Appellants argue that neither Krahe nor Foller meets the requirement of claims 1 and 18 that the first and second thermocouple junctions are coupled in series, which "requires only one sensing circuit or one data acquisition channel." (Claims 1 and 18; *See also* FF 2). We agree.

While the Examiner finds (Ans. 3-4) that Krahe and Foller individually teach the claimed first and second thermocouple junctions, the Examiner does not direct us to any teaching in either Krahe or Foller to meet the requirement of claims 1 and 18 that the first and second thermocouple junctions are coupled in series. Merely directing us to teachings that meet the first and second thermocouple junctions does not address the requirement that the first and second thermocouple junctions are coupled in series. (*See also* FF 2).

Thus, it follows that Appellants have shown reversible error in the Examiner's finding that both Krahe and Foller anticipate the subject matter of claims 1 and 18.

With respect to rejection (3), because the Examiner relies on, *inter alia*, the same findings discussed above and does not provide any findings as to how Pai would satisfy the requirement that the first and second thermocouple junctions are coupled in series, we reverse the Examiner's § 103 rejection.

**ORDER**

In summary, all of the rejections are reversed.

Accordingly, the decision of the Examiner is reversed.

**REVERSED**

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